

**Claims as Amended; Response to Office Action
Dated October 4, 2000**

Serial No. 09/287,602

Atty. Dkt. No. 5480-00200

WHAT IS CLAIMED IS:



1. (Amended) A gas scrubber comprising:

a combustion chamber;

a wetting chamber placed below said combustion chamber to form a single unit;

a guide plate arranged between the combustion chamber and the wetting chamber
for directing a gas from the combustion chamber into the wetting chamber;
and


an injection nozzle having an opening adapted to deliver a conditioned gas above
the guide plate during operation of the gas scrubber for minimizing the
production and/or accumulation of a powder at an interface between the
combustion chamber and the wetting chamber.

2. (Amended) The gas scrubber according to claim 1, wherein the combustion chamber
is adapted to burn flammable elements of the gas.

3. (Amended) The gas scrubber according to claim 1, wherein the wetting chamber is
adapted to receive water, and wherein said water reacts with water-soluble elements of
the gas directed from the combustion chamber.

4. (Amended) The gas scrubber according to claim 1, wherein the wetting chamber
comprises:


an angled bottom surface which collects particulates produced in the wetting
chamber; and

 a water expulsion nozzle having an opening directed to the angled bottom for flushing the particulates into a drain.

5. (Amended) The gas scrubber according to claim 1, wherein the wetting chamber
5 comprises:

a plurality of water drenched absorbers across which the gas is directed; and

10 an exhaust pipe having an opening extending into the wetting chamber for
receiving the gas after said gas is passed across at least a portion of the
water drenched plurality of absorbers.

 15 6. (Amended) The gas scrubber according to claim 5, wherein the gas delivered from the
combustion chamber is a relatively high temperature gas that cools as it traverses the
plurality of water drenched absorbers, and wherein the conditioned gas is delivered above
the guide plate such that the gas delivered from the combustion chamber does not directly
contact a substantial portion of the cooler gas that traverses the plurality of water
drenched absorbers.

 20 7. (Amended) A gas scrubber comprising:

a combustion chamber for eliminating explosive and flammable elements
contained in a gas delivered into the combustion chamber from a gas
intake;

25 a wetting chamber placed below said combustion chamber to receive the gas from
the combustion chamber and dissolve a water soluble element of the gas;
and

a means for minimizing a powder produced at an interface between said combustion chamber and said wetting chamber, wherein said means for minimizing is conducted during the operation of the gas scrubber.

5 8. (Amended) The gas scrubber according to claim 7, wherein said combustion chamber comprises:

a case connected to receive the gas intake and an air intake; and

10 a heating means placed inside of said case for applying heat to the gas flowing into said case from the gas intake.

9. (Amended) The gas scrubber according to claim 8, wherein said heating means includes:

15

a heating chamber;

multiple heat exchange units arranged in a pattern of rows inside said heating chamber, wherein each of said heat exchange units comprise an electrical heating element configured inside a ceramic casing; and

20

a pair of cleaning air nozzles installed on an upper side of said heater chamber for periodically delivering air across the heat exchange units to minimize accumulation of powder upon an outer surface of the ceramic casings.

25

10. (Amended) The gas scrubber according to claim 9, wherein each of the multiple heat exchange units further comprises an electrical insulator positioned between the electrical heating element and the ceramic casing in order to prevent a short circuit between the electrical heating element and the outer surface of the ceramic casing.

30

11. (Amended) The gas scrubber according to claim 9, wherein each of the multiple heat exchange units comprises an Inconel® tube.

5 12. (Amended) The gas scrubber according to claim 9, wherein the combustion chamber comprises a nitrogen delivery nozzle having an opening directed into the heating chamber, wherein the nitrogen delivery nozzle directs nitrogen across an interface between the multiple heat exchange units and an electrical power conductor.

10 13. (Amended) The gas scrubber according to claim 9, further comprising a controller adapted to regulate the flow of electricity to the multiple heat exchange units, wherein twice the amount of electricity is supplied to one set of heat exchange units when electricity flow to a corresponding set of heat exchange units is terminated.

15 14. (Amended) The gas scrubber according to claim 7, wherein a water jacket is installed on said gas intake in order to cool the gas within the combustion chamber and prevent said gas from flowing backward into the gas intake at a high temperature.

20 15. (Amended) The gas scrubber according to claim 7, wherein said wetting chamber includes:

a case comprising a plurality of partitions to direct the gas from said combustion chamber through a centralized region of the case;

25 a plurality of absorbers installed in a region exterior to the plurality of partitions, wherein said plurality of absorbers are at least partially drenched in water for dissolving water soluble elements contained in the gas as the gas flows through the plurality of absorbers;

30 a shower nozzle having a water delivery opening directed above each of said plurality of absorbers for drenching said plurality of absorbers; and

an exhaust pipe having an opening extending into the case for expelling a portion of said gas to an ambient outside of said case.

5 16. (Amended) The gas scrubber according to claim 15, wherein a bottom portion of said case is configured in a v-shape to collect sludge residing in said bottom portion, wherein said sludge comprises particles entrained in water, and wherein said wetting chamber further comprises:

10 

a drain valve; and

a water nozzle coupled to a side of the bottom portion.

15 17. (Amended) The gas scrubber according to claim 16, further comprising a sensor positioned above the drain to monitor a level of water residing in said bottom portion, and wherein said sensor is configured to send a signal to initiate water flow from said water nozzle to push the sludge out through the drain when said water level reaches a specified height.


20 18. (Amended) The gas scrubber according to claim 16, wherein a pressure tube is placed in the space between said case and the drain to maintain a constant pressure within said wetting chamber.

25 19. (Amended) The gas scrubber according to claim 16, wherein a transparent plate is hinged on one side of said case so that the water level can be checked from an exterior of the gas scrubber.

20. The gas scrubber according to claim 15, wherein an inner surface of said case and an inner surface of the exhaust pipe are coated with Teflon.

30

21. (Amended) The gas scrubber according to claim 15, wherein said means for minimizing a powder includes:

5  a guide plate comprising a funnel-shaped guide configured to direct the gas from said combustion chamber to said wetting chamber; and

an injection nozzle installed on all four sides of said guide plate to inject air or nitrogen above the guide plate for removing the powder from the guide plate through an opening formed by the funnel-shaped guide.

10